

### **ABSTRACT OF THE DISCLOSURE**

A semiconductor device includes a base region of a first conductivity type formed on a top surface of a collector layer of a second conductivity type, and the first conductivity type is opposite the second conductivity type. A groove is formed in the surface of the base region, and an emitter region of the second conductivity type is formed in the surface of the base region at the bottom of the groove. Thereby, fine base width  $W_b$  and low base resistance  $r_b$  are obtained.

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